
FLORA AND FAUNA ASSESSMENT OF THE PROPOSED POLISHING POND, CREEK AND ROAD DIVERSIONS, COMSTOCK MINE ZEEHAN, TASMANIA



Report prepared by Brian French (B.Sc.) for Oceania Tasmania Ltd.



**PO Box 648, Sunbury, Victoria, 3429
Australia**

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1. INTRODUCTION

Oceania Tasmania Ltd are investigating the construction of a polishing pond (tailings dam) diversion of Comstock Creek into the polishing pond and the diversion of the Trial Harbour Road to allow the extension of the existing open cut mine.

The proposed development area encompasses the existing Oceania Tasmania Ltd mining leases (lease numbers ML 123/1947, ML 9M/2002, ML 9M/1995, and ML 43M /1985) (Figure 1). The lease area is currently 146 ha of an area that has had a long history of mining activity with the first production occurring in 1887. The area has numerous mine workings (shafts and adits) and remnant constructions such as old tram tracks. Currently, a large portion of the area has an open cut mine, overburden dumps and associated road infrastructure.

The purpose of this survey is to conduct a flora and fauna assessment of the proposed polishing pond, stream and road diversion and general flora communities and potential fauna habitat that occurs over the areas of the current mining leases. The location of the proposed polishing pond and road re-location are indicated in figure 2.

1.1 SITE DESCRIPTION

The Comstock mining lease areas are characterized by complex geology associated with the mineralization of the Zeehan area. The topography of the site is gently undulating hills with Comstock Creek flowing through the western section of the lease area.

Current development at the site includes:

- Open cut mine and processing plant;
- Overburden dump;
- Trial Harbour Road;
- Numerous vehicle tracks associated with mineral exploration,
- Powerline easement and,
- Historical areas of disturbance associated with past mining/exploration activities (e.g. adits, shafts, tailing dams and tram lines).

The area is in good natural condition considering the extensive industrial use of the area in the past. The lease area has wet eucalyptus forest, rainforest and moorland vegetation types with few exotic plant species present.

1.2 STRUCTURE OF THE REPORT

This report deals with the following issues for the proposed development area:

- Plant species – inventory and conservation status;
- Plant communities – inventory and conservation status;
- Fauna species – conservation status and their potential habitat and,
- Management issues.

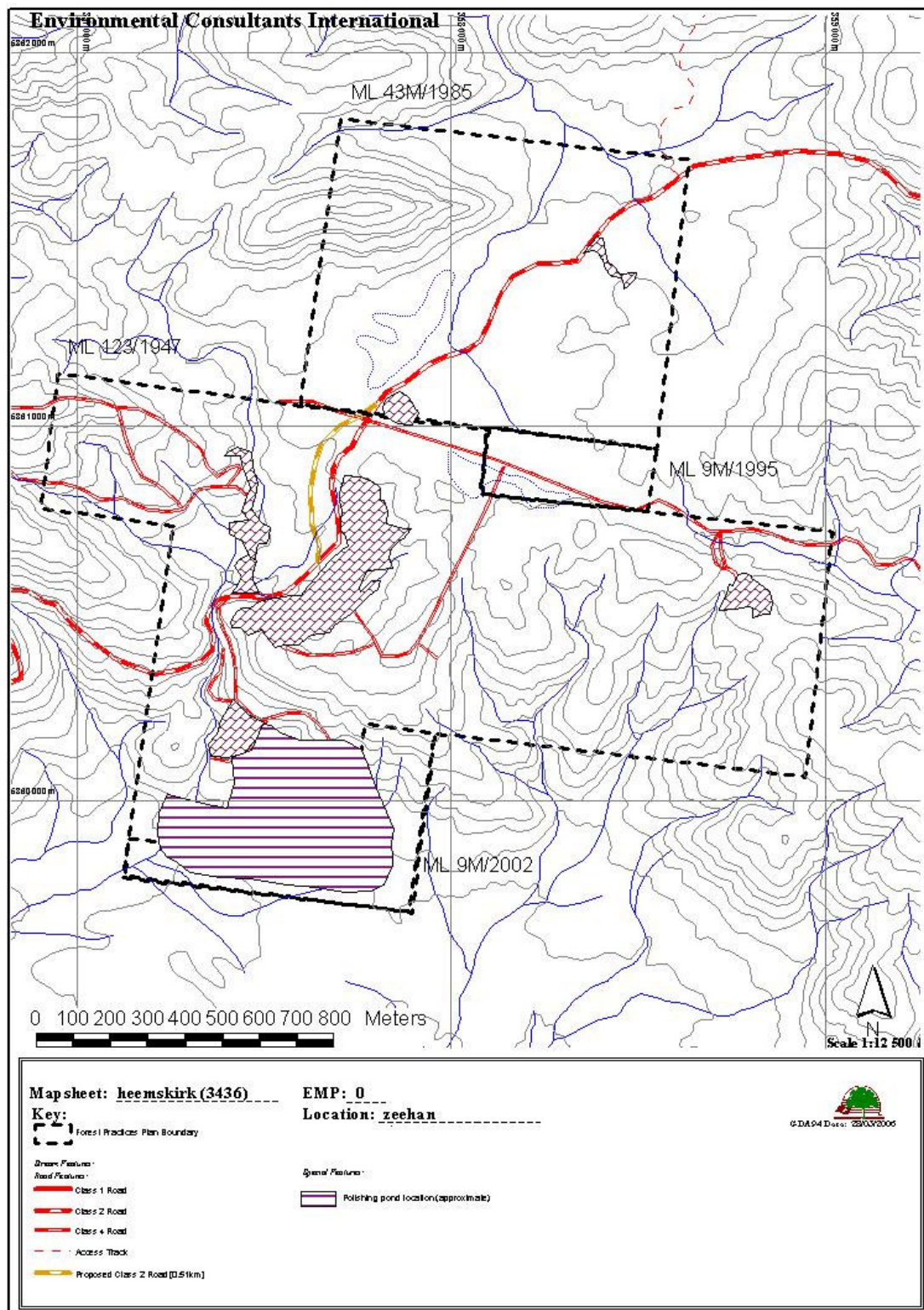


Figure 2: Proposed locations of road location and polishing pond site.

1.3 QUALIFICATIONS

The qualifications to this report are:

- Fieldwork and analysis have been undertaken thoroughly, taking into account the resources available. However, the author and Environmental Consultants International (ECI) do not take responsibility for misidentification of species or plant communities, or incorrect determination of their extent and conservation status.
- The species list provided is comprehensive, but not exhaustive. Many Tasmanian species (e.g. orchids) are short-lived annuals or have their flowering times outside the survey period. It is likely that other plant species could be recorded at other times of the year.
- The Nature Conservation Branch of DPIWE has detailed requirements for flora and fauna assessments of proposed developments (DPIWE 2004). These include providing DPIWE with plot details of the assessed site and collating information on any threatened species located. Samples of threatened species have to be collected and forwarded to the Tasmanian Herbarium.
- The report gives an outline of the legislative and policy requirements related to the conservation and management of native vegetation and fauna. If required, further information can be obtained from DPIWE specialists dealing with flora and fauna conservation and management.
- It is not the responsibility of the authors or ECI to make decisions about land management at the site, or to liaise with DPIWE or other agencies or individuals on behalf of the proponents.

1.4 REVIEW OF EXISTING INFORMATION ON FLORA AND FAUNA

Flora

There is little information published on the vegetation of specific areas of western Tasmania. However, nearby there are nationally significant plant species that are restricted to localised populations and threatened communities that have received much attention during processes such as the Regional Forest Agreement (1997).

Papers and reports that describe the vegetation of the Zeehan area that is relevant to this assessment include a broad description of the vegetation of Western Tasmania (Kirkpatrick 1977, Reid *et al.* 1999, Harris and Kitchener 2005); descriptions of the plant species and communities in reserves in western Tasmania (North *et al.* 1998) and descriptions of specific broad vegetation types e.g. Jarman *et al.* (1988); Buttongrass moorland.

Several reports and papers, discussed in the following section, describe plant communities that occur in the study areas. These reports include classifications of the different vegetation types, based on intensive sampling across Tasmania, including the vegetation of the west Coast region of Tasmania. The vegetation of the area has also been mapped as part of statewide vegetation projects, most notably assessments associated with the Regional Forest Agreement (1997) and the current Tasmanian vegetation Mapping Project (TASVEG).

Fauna

Due to the difficult nature of recording fauna species, database searches were conducted to ascertain what potential fauna species have been recorded in the area previously with particular attention being paid to recorded threatened species.

2. METHODS

2.1 DESKTOP ASSESSMENT

Flora

Literature containing information on the vegetation of the area was examined. Databases held by DPIWE, containing records of vegetation and threatened species occurring in the general area were also reviewed.

The following maps containing information on the composition and structure of the vegetation were examined:

- The RFA forest communities map (RFA 1996);
- TASVEG communities map accessed via the Parks and Wildlife GIS server Natural Values Report (Accessed 23rd February 2006).

Fauna

A data base search (GTSpot) was conducted to find what threatened fauna species had been recorded in the area in the past. Furthermore, Tasmania's Threatened Fauna Handbook (Bryant and Jackson 1999) and the Forest Practices Authority's Threatened Fauna advisor (www.fpa.tas.gov.au) were used to ascertain what potentially threatened species could potentially occur within or near the area assessed.

FIELDWORK

The desktop assessment assisted with determining the approach for fieldwork so that the range of vegetation communities and potential fauna habitat within the area was sampled as efficiently as possible. Three days were spent in the field (27th and 28th February and 24th March 2006).

Non-permanent plots were located within representative vegetation. The plots had a nominal area of approximately 30 m. Detailed information on vegetation structure and composition (vascular species) was recorded. Specimens were collected for plants requiring subsequent identification or confirmation. A running species list was used to record additional species observed outside the plots. For each plot, information was also collected on the condition of the vegetation and broad environmental variables (drainage, aspect, rock type etc). The conservation significance of the area for fauna species was assessed by recording suitable environments for threatened fauna species known to occur in the area. Scats, tracks, diggings and avian fauna were also recorded. The location of the sites was determined by GPS.

Potential management issues were assessed during the course of the fieldwork. Particular attention was given to potential occurrences of the root rot pathogen, *Phytophthora cinnamomi* which is one of the major threats to dry forest, scrub and heath vegetation in the lowland areas of Tasmania. Road edges, tracks and other disturbed sites within the study area were examined for symptoms of *Phytophthora*, and also the presence of invasive exotic plant species.

2.2 ANALYSIS

Flora and Fauna Species

Species nomenclature, identification and inventory

Species lists were prepared for the study areas (see appendix 1). Species nomenclature for flora in this report is based on Buchanan (2005) and Bryant and Jackson (1999) for threatened fauna species.

Species of conservation significance

No flora species listed on Schedules of the Tasmanian *Threatened Species Protection Act 1995* were identified from the area surveyed. However, one fauna species was observed within the area assessed. Other species could be present that were overlooked during the current assessment or were not evident at the time of year that field work took place.

Details of the classification systems and legislative requirements relating to listed species are given in the Act, or can be obtained from the Threatened Species Unit of DPIWE. Some of the main points relevant for the development proponents are given below.

- Plant species are listed on Schedules of the Tasmanian *Threatened Species Protection Act* according to their perceived level of threat, as determined by botanists, zoologists or ecologists. Listing is based on the distribution of the species and its susceptibility to various forms of disturbance. The schedules are:
 - Schedule 3: Species considered to be extinct or endangered in Tasmania;
 - Schedule 4: Species considered to be vulnerable in Tasmania;
 - Schedule 5: Species considered to be rare and at risk in Tasmania.
- Species on Schedule 3 generally have a higher priority for conservation than those on Schedule 4, and those on Schedule 4 generally have higher priority for conservation than those on Schedule 5. However, other factors also need to be taken into account in assessing the conservation value of a listed species at a particular site. These factors include the population size of the threatened species at the site; the condition and context of the vegetation at the site; the tenure of the site; the regional context (e.g. if the population is outlying or very unusual within a region); and the reservation status of the species.
- A permit is required for any activity that will knowingly disturb or destroy any individuals of a plant or animal species listed on the Tasmanian *Threatened Species Protection Act*. The permit is issued by the Threatened Species Section of DPIWE. If a listed species will be affected by a proposed activity, specialists from DPIWE, in conjunction with the land managers, will try to develop prescriptions to avoid or reduce adverse effects on threatened species. If appropriate, these prescriptions would be incorporated into the permit conditions.

Plant Communities

Community classification, identification and inventory

Information on structure and composition of vegetation was used to allocate the vegetation at each plot site to a plant community. Field notes and other information were then used to map the extent of the plant communities for the development area.

There have been many classifications of Tasmanian plant communities. The main reasons are to identify the extent and conservation status of different communities, to help prioritise conservation and management planning. It is important to recognise that each plant community represents the whole suite of plant species, animal species and other values that occur within that unit, and not just the dominant species (e.g. *E. nitida*) that may give its name to a particular community (e.g. *E. nitida* shrubby forest).

There are currently two levels of classification of Tasmanian plant communities, and both have been used in this report.

The broadest level of classification are the non-forest communities used in the current TASVEG Vegetation Mapping Project (Harris & Kitchener 2005) and the forest communities used in the 1996 forest community mapping undertaken during the Regional Forest Agreement. The vegetation maps of the study areas map the vegetation at this broad community level.

At the finer level of community classification are the communities identified by various classifications of Tasmanian vegetation types. These finer communities are termed floristic communities. The floristic communities present at each plot site have been determined, but they are not presented in the vegetation maps. However, tables in the following section indicate which floristic communities are present within the broad communities used for each area. By considering floristic communities, a better picture is often gained of the diversity and conservation significance of the vegetation in an area.

The classifications of floristic communities are based on the following sources:

- Kirkpatrick *et al.* (1988): wet eucalypt forests;
- Duncan and Brown (1985): dry sclerophyll forests;
- Harris and Kitchener (2005): other vegetation types.

Communities of conservation significance

The conservation status of broad communities and floristic communities recorded from the study areas have been determined by reference to:

- Statewide analyses of past and current extent and conservation status of forest communities, as determined by studies undertaken as part of the Tasmanian RFA process.
- Analyses undertaken during the current Tasmanian Vegetation Mapping Project (TASVEG), which give an indication of the distribution and conservation status of non-forest communities.
- Assessment of the reservation status of floristic communities at a Statewide level (Kirkpatrick *et al.* 1995, Forest Practices Authority 2005) and regional level (Forest Practices Authority 2005).

Information from the above sources has been augmented by recent knowledge available to the author, as a result of fieldwork, reference to other published and unpublished studies, and discussions with other botanists familiar with the general area.

The vegetation analyses and mapping have been conducted thoroughly, taking into account the time and resources available. There are inevitably some shortcomings and qualifications that need to be recognised (some of these have been alluded to). They are:

- the vegetation maps are only a representation of the distribution of the broad communities within the study area;
- the boundaries between communities are generally diffuse;

A reasonable indication of the extent of each broad community within the study area is provided, with the general extent of the floristic communities also indicated.

3 RESULTS

Flora

Background

Seventeen non-permanent plots were located in the area of the Comstock mining leases. Running species lists were collected between the plots and along roads/tracks.

3.1 PLANT SPECIES

Inventory

A total of 117 vascular plants were found within the Comstock mining leases (Appendix 1). Of these, 107 are native species (including 18 endemic species) and 10 are exotic. Appendix 1 indicated all the species recorded. A summary is given below.

TABLE 1: Summary of the vascular plant species recorded in the Comstock area.

| Group | Native species | | Exotic species | Total |
|---------------------|----------------|-----------|----------------|------------|
| | Endemic | Other | | |
| Ferns & fern allies | 0 | 15 | 0 | 15 |
| Gymnosperms | 1 | 0 | 0 | 1 |
| Monocotyledons | 3 | 25 | 3 | 31 |
| Dicotyledons | 14 | 49 | 7 | 70 |
| Total | 18 | 89 | 10 | 117 |

Species of conservation significance

No species listed on the schedules of the Tasmanian *Threatened Species Protection Act 1995* were recorded.

Threatened Flora

The Natural Values Report (Dept of Primary Industries, Water and Environment GIS Web Server) did not indicate the presence of any other threatened plant species within 500 m of the study area.

However, within 5000 m of the study area, a record exists for the following threatened flora species. This species was not located during the current assessment. Due to the time of the year that the assessment was conducted, this species and annual species (e.g. herbaceous species) may not of have been evident during this assessment.

TABLE 2: Threatened flora species recorded within 5 km of the study area.

| Botanical name | Common name | Comments |
|----------------------------|--------------------|------------------------|
| <i>Orthoceras strictum</i> | Horned orchid | Not seen during survey |

3.2 PLANT COMMUNITIES

Seven native vegetation communities were recorded from the Comstock mining leases with the areas associated with mining activities mapped as Extra-urban miscellaneous (FUM). All of the plant communities recorded within the area assessed were in good condition with few weed species present considering the long history of mining activities in the area.

The plant community structure in the area is a factor of the high fire regimes in the area. The communities gradationally blend between the frequently burnt buttongrass and the wet forest/rainforest communities. A summary of the plant communities and their conservation status is given below.

TABLE 3: Summary of the plant communities and their conservation status.

| TASVEG community | RFA community | Floristic community | Conservation Status |
|--|---|---|----------------------------|
| <i>Eucalyptus nitida</i> dry forest and woodland (DNI) | Dry <i>Eucalyptus nitida</i> forest (N) | Scrubby <i>Eucalyptus nitida</i> forest/woodland (DRY-scNIT) | Non-priority |
| <i>Eucalyptus nitida</i> forest over rainforest (WNR) | Tall <i>E. nitida</i> forest (NT) | <i>E. nitida</i> - <i>Anodopetalum biglandulosum</i> - <i>Leptospermum glaucescens</i> wsf/mixed forest (WET-NIT0) | Non-priority |
| <i>Eucalyptus nitida</i> forest over <i>Leptospermum</i> (WNL) | Tall <i>E. nitida</i> forest (NT) | <i>E. nitida</i> - <i>Melaleuca squarrosa</i> - <i>Monotoca glauca</i> wsf (WET-NIT2) | Non-priority |
| <i>Leptospermum</i> with rainforest scrub (RLS) | Thamnic rainforest on less fertile sites (M-) | <i>Leptospermum lanigerum</i> - <i>Phyllocladus aspleniifolius</i> - <i>Nothofagus cunninghamii</i> over <i>Anopterus glandulosus</i> - <i>Anodopetalum biglandulosum</i> | Non-priority |
| <i>Acacia melanoxylon</i> forest on rises (NAR) | <i>Acacia melanoxylon</i> forest on rises (BR) | Riparian Blackwood, myrtle/dogwood forest | Non-priority |
| Western wet scrub (SWW) | <i>Leptospermum</i> sp. <i>Melaleuca squarrosa</i> swamp forest (L) | <i>Leptospermum glaucescens</i> - <i>Leptospermum scoparium</i> closed forest | Non-priority |
| Buttongrass moorland with emergent shrubs (MBS) | Not covered by RFA mapping. | Standard peat (B1a) | Non-priority |
| Extra-urban miscellaneous (FUM) | Not covered by RFA mapping. | This is a non-native mapping unit – there are no native floristic communities. | Non-priority |

The following information describes the vegetation communities recorded within the study area. Information is given on the conservation significance and extent of with notes on the management of the communities in relation the development proposal. Figure 4 indicates the extent of the forest communities recorded during the current assessment. Appendix 2 indicates the structure of the plant communities assessed using the most abundant species recorded.

***Eucalyptus nitida* dry forest and woodland (TASVEG code DNI, RFA code NI)**

Eucalyptus nitida dry forest and woodland is common over the Comstock area. This community occupies the relatively drier slopes and gullies. *Eucalyptus nitida* dry forest and woodland is gradational between the wetter *E. nitida* forest over *Leptospermum* (WNL) and the Western wet scrub (SWW).

This community is in good condition with no introduced or weed species recorded.

***Eucalyptus nitida* forest over rainforest (TASVEG code WNR, RFA code NT)**

Eucalyptus nitida forest over rainforest occurs in two areas, a patch to the north of the existing open cut mine and to the south of Trial Harbor Road in the vicinity of Comstock Creek. This community is best described as a mixed forest community due to the presence of rainforest species in the understorey. A section of this community has been cleared for the diversion of Comstock Creek away from the acid mine water coming out of the adit on the creek.

This community is in good condition with no weed species being recorded despite the disturbance that has occurred within and adjacent to this community. In the northern patch, *E. brookeriana* trees are present. This is due to the poor drainage of this area.

***Leptospermum* with rainforest scrub (TASVEG code RLS, RFA code M-)**

Leptospermum with rainforest scrub dominates a large patch in the northwestern section of the lease area. This community has not been burnt for a long period; however the tea tree and occasional eucalypt species in the overstorey are indicators that this community has formed due the lack of fire. There are recently cut tracks and old mine workings, but these activities have not affected the overall condition of this community.

The proposed road diversion to allow the open cut to be extended occurs within this community to the north of the existing open cut.

***Eucalyptus nitida* forest over *Leptospermum* (TASVEG code WNL, RFA code NT)**

Eucalyptus nitida forest over *Leptospermum* is a transitional community between scrub (SWW) and rainforest communities (RLS). This community is common within the proposed lease area, however, was not formally mapped due to the integration between the above mapped communities.

This community was diverse due to it being gradational nature with the other plant communities recorded at the site. These species formed a single dense layer with only

scattered sedges (*Gahnia grandis*.) and the scrambling *Bauera rubioides* being common within the shrub layer. Some young rainforest species were present. This community is in good condition with no weed species being recorded.

***Acacia melanoxylon* forest on rises (TASVEG code NAR)**

Acacia melanoxylon forest on rises dominated the north of the area assessed and is characterised by single age structure due to fire in the past. This community would of have been thamnisc or calladendrous rainforest in the absence of fire.

This community is in good condition with few weed species being recorded, however, small populations of Gorse (*Ulex europaeus*) and Blackberry (*Rubus fruticosus*) were localized around roadsides and other disturbed sites within the area assessed.

Western wet scrub (TASVEG code SWW, RFA code L)

Western wet scrub is a common community in wet gullies and creek lines within the Buttongrass moorland and sedgeland (MBS) community. Furthermore, this community was transitional between the rainforest (RLS), *E. nitida* wet and dry forest (DNI, WNR & WNL) and the buttongrass moorland with emergent shrubs (MBS).

This community is in good natural condition with few weed no weed species recorded.

Buttongrass moorland and sedgeland with emergent shrubs (TASVEG code MBS)

Buttongrass moorland and sedgeland with emergent shrubs dominated the lease area. This community is the result of frequent fires and is common in the Zeehan region. Fire frequency has been high in the past. This community dominated the poorly drained plains and hills throughout the area. There has been numerous tracks cut for mineral exploration, power line easements and old tram lines.

Buttongrass moorland and sedgeland with emergent shrubs is in good overall condition. However, some death of plant species was observed along the margins of tracks and in disturbed areas. The plant pathogen *Phytophthora cinnamomi* (root rot fungus) causes the death in susceptible species (e.g. Epacridaceae species) and can have a major long term impact on the vegetation in an area. Further information is given on the management considerations in the recommendations section.

Extra urban miscellaneous (TASVEG code FUM)

Extra urban miscellaneous was included as anon forest mapping unit due to the large areas of the lease area that had disturbance associated with mining activities. These areas are the open cut, waste rock dumping area and area of old workings in the eastern section of the lease area.

The weed species, Blackberry (*Rubus fruticosus* agg.) and Gorse (*Ulex europaeus*) could be ascribed to this mapping unit due to their preference for disturbed areas. Further information on these species is included in the recommendations section below.

Plant communities of conservation significance

No plant communities of conservation significance under the Regional Forest Agreement (1997) or any other state or national vegetation management policies occurred within the Comstock mining lease area.

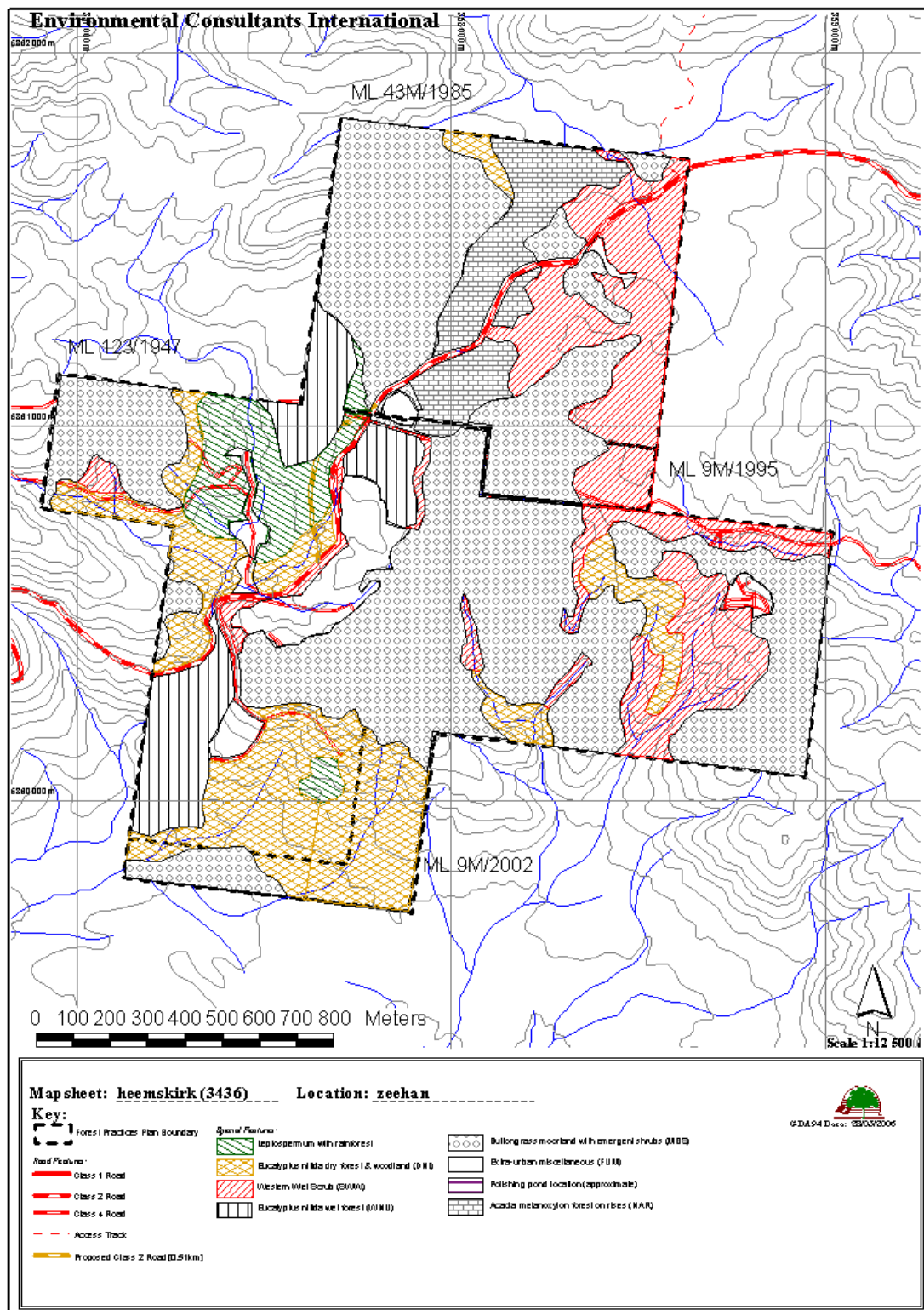


FIGURE 4: Plant communities occurring in the Comstock mining lease area.

3.3 FAUNA

A database search (GTSpot) did not indicate the presence of threatened fauna species within 500 m of the Comstock lease area. However, within 5 km of the lease area, the data base search indicated the presence of the listed threatened fauna species (Table 4). See attached GTSpot report for details on the threatened fauna records in the area.

The proposed expansion of the open cut mine is not good habitat for aquatic species due to the acid drainage from old mine workings and drill holes.

Table 4: Threatened fauna species recorded in the Comstock area.

| Scientific name | Common name | Comments |
|-----------------------------------|-------------------------|-----------------------------|
| <i>Aquila audux fleayi</i> | Wedge-tailed eagle | Suitable habitat present |
| <i>Dasyurus maculatus</i> | Spotted-tailed quoll | Suitable habitat present |
| <i>Sarcophilus harrisii</i> | Tasmanian devil | Recorded in area |
| <i>Accipiter novae-hollandiae</i> | Grey goshawk | Suitable habitat present |
| <i>Haliaeetus leucogaster</i> | White-bellied sea eagle | No suitable habitat present |
| <i>Halobaena caerulea</i> | Blue petrel | No suitable habitat present |
| <i>Pachyptila turtur</i> | Fairy prion | No suitable habitat present |

Wedge-tailed eagle (*Aquila audux fleayi*)

A nest search was conducted in suitable habitat (wet forest) on the leeward slopes to the prevailing wind. No nests were found.

Spotted-tailed quoll (*Dasyurus maculatus*)

The Spotted-tailed quoll has been recorded near the proposed exploration area. Much of the habitat in the area is suitable habitat for this species.

Tasmanian devil (*Sarcophilus harrisii*)

Tasmanian devil scats were observed at a number of locations within the study area. the vegetation recorded within the area is suitable habitat for the Tasmanian devil.

Grey goshawk (*Accipiter novae-hollandiae*)

The area is suitable habitat for the Grey goshawk, however no nests or the species was observed during the current assessment. The proposed activities will not affect the habitat of the species in the area. Further assessments will need to be made if further vegetation clearance is to occur in the area in the future.

4 MANAGEMENT ISSUES AND RECCOMENDATIONS

Weed and Disease Management

Small infestations of the listed weed species, Gorse (*Ulex europaeus*) and Blackberry (*Rubus fruticosus* agg.) occur along abandoned railway and on the margins of tracks within the lease area. Zeehan Zinc has an active program to control gorse in their lease areas and regular herbicide application has occurred in the past.

The soil borne pathogen *Phytophthora cinnamomi* (Root rot fungus) was observed along tracks within the susceptible vegetation type, buttongrass moorland with emergent shrubs (MBS). The infestations are only local. The proposed construction activities could potentially expand the range of the pathogen in the area if hygiene precautions are not followed.

To control the weed and disease infestations in the Comstock area, the following management should be carried out:

- Oceania Pty Ltd should work in conjunction with the West Coast Council on the removal of the current infestations prior to any further disturbance occurring in the area. This will aid in controlling the further spread of these potentially invasive species into the surrounding bush or other areas.
- The material sourced for the construction of the road diversion area should be sourced from a quarry that has been designated as weed and disease free. This will further reduce the potential infestation by other weed species and the spread of *Phytophthora*.
- Machinery hygiene prescriptions should be applied to further minimise the introduction of weed species and *Phytophthora*.
- Monitoring and control of weed infestations should continue to take place. This should include all tracks and disturbed areas.

Information on the control of weed and disease issues is available from the Department of Primary Industries, Water and Environment website (www.dipwe.tas.gov.au). Advice is also available from the staff of this agency.

The Tasmanian devil is recorded from the lease area. The western tasmanian populations of the species are currently free from the facial tumor disease which is threatening the species.

Plant Community Management

- The plant communities within the proposed construction area are not listed on any state or national vegetation management policies.

Fauna management

Only small areas of native vegetation will be affected by the proposed activities in the lease area. These activities will not have large adverse impacts on the recorded threatened fauna in the area. However, if a large suspected Wedge-tailed eagle or Grey goshawk nest is discovered, the Threatened Species Section (DPIWE) should be contacted and suitable management prescriptions arranged. Furthermore, if a Tasmanian devil is observed in the area and is suspected of having the devil facial tumor Disease, the Wildlife Management Branch (DPIWE) should be contacted and the suspected disease reported.

5 SUMMARY

The proposed developments in the Comstock mining lease area will have little effect on the flora or fauna that occur in the area. This is due to the high levels of disturbance from mining activities that have occurred over a hundred year period.

Flora

The proposed exploration program will have little impact on the native vegetation recorded at within the area. The area has responded to past mining and this operation is small compared to the past activities in the area. A more detailed botanical assessment will have to be made in the future if further development will take place.

Small infestations of the noxious weed, Gorse (*Ulex europaeus*), Himalayan honeysuckle (*Leycesteria formosa*) and Blackberry (*Rubus fruticosus*) occur along tracks within the area assessed. Due to the presence of these species, weed management guidelines should be implemented to reduce the further invasion of this species with the proposed activities. The Tasmanian Washdown Procedures for Weed and Disease Control should be followed to reduce the spread of the species to and from the proposed exploration area (Rudman, Tucker and French 2004). Monitoring of the species post operation should take place also to limit the spread of the species in the area.

There are no constraints on the proposed exploration activities under the vegetation management guidelines and policies of the Regional Forest Agreement (RFA 1997) or any other state vegetation management policies.

Fauna

The Tasmanian devil was the only observed threatened fauna species recorded within the proposed developments in the Comstock mining lease area. Other species most likely to occur in the area are the birds of prey, Wedge-tailed eagle and the Grey goshawk. If a large suspected Wedge-tailed eagle or Grey goshawk nest is discovered, the Threatened Species Section (DPIWE) should be contacted and suitable management prescriptions arranged. If a Tasmanian devil is observed in the area and is suspected of having the devil facial tumor Disease, the Wildlife Management Branch (DPIWE) should be contacted and the suspected disease reported.

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APPENDIX 1: Vascular plant species recorded in the Comstock Mining lease area.

Nomenclature follows Buchanan (2005)

i – introduced/naturalised species

e – Tasmanian endemic species/subspecies

DICOTYLEDONAE

APIACEAE

Hydrocotyle hirta

ASTERACEAE

Cassinia aculeata

i *Hypochoeris radicata*

Olearia stellulata

e *Olearia tasmanica*

e *Ozothamnus purpurascens*

CAMPANULACEAE

Lobelia anceps

CAPRIFOLIACEAE

i *Leycesteria formosa*

CUNONIACEAE

e *Anodopetalum biglandulosum*

Bauera rubioides

DROSERACEAE

Drosera binata

Drosera peltata subsp. *peltata*

Drosera pygmaea

EPACRIDACEAE

Epacris impressa

Epacris lanuginosa

Epacris obtusifolia

Leptecophylla juniperina subsp.
juniperina

Monotoca glauca

Sprengelia incarnata

e *Trochocarpa gunnii*

ESCALLIONACEAE

e *Anopterus glandulosus*

EUCRYPHIACEAE

e *Eucryphia lucida*

FABACEAE

Dillwynia glaberrima

Oxylobium arborescens

i *Ulex europaeus*

FAGACEAE

Nothofagus cunninghamii

GENTIANACEAE

i *Centaurium erythraea*

HALORAGACEAE

Gonocarpus micrantha

Gonocarpus teucrioides

LENTIBULARIACEAE

Utricularia dichotoma

MIMOSACEAE

Acacia melanoxylon

Acacia mucronata

Acacia verticillata var. *verticillata*

MYRTACEAE

e *Baeckea leptocaulis*

Eucalyptus brookeriana

e *Eucalyptus nitida*

Leptospermum glaucescens

Leptospermum lanigerum

e *Leptospermum nitidum*

Leptospermum scoparium var.
scoparium

Melaleuca squamea

Melaleuca squarrosa

PITTOSPORACEAE

Billardiera macrantha

Pittosporum bicolor

PLANTAGINACEAE

i *Plantago lanceolata*

POLYGALACEAE

Comesperma retusum

POLYGONACEAE

Muehlenbeckia gunnii

PROTEACEAE

Banksia marginata

e *Cenarrhenes nitida*

e *Hakea epiglottis*

e *Orites diversifolia*

Persoonia juniperina

RANUNCULACEAE

Clematis aristata

RHAMNACEAE

Pomaderris apetala

e *Spyridium gunnii*
ROSACEAE
 Acaena novae-zelandiae
 i *Cotoneaster* sp.
 i *Rubus fruticosus* agg.
RUBIACEAE
 Coprosma nitida
 Coprosma quadrifida
RUTACEAE
 Boronia nana
 Nematolepis squamea
 Philotheca virgata
SANTALACEAE
 Exocarpos strictus
STYLIDIACEAE
 Stylidium graminifolium
THYMELAEACEAE
 e *Pimelea cinerea*
 Pimelea drupacea
 Pimelea linifolia subsp. *linifolia*
VIOLACEAE
 Viola hederacea
WINTERACEAE
 Tasmannia lanceolata

GYMNOSPERMAE
PODOCARPACEAE
 e *Phyllocladus aspleniifolius*

MONOCOTYLEDONAE
CENTROLEPIDACEAE
 Centrolepis strigosa
CYPERACEAE
 Gahnia grandis
 Gymnoschoenus sphaerocephalus
 Lepidosperma elatius
 Lepidosperma filiforme
 Schoenus apogon
 Schoenus sp.
IRIDACEAE
 e *Diplarrena latifolia*
 Libertia pulchella var. *pulchella*
 Patersonia fragilis
JUNCACEAE
 Juncus australis
 Juncus pallidus

LILIACEAE
 Dianella tasmanica
 Drymophila cyanocarpa
ORCHIDACEAE
 Thelymitra sp.
POACEAE
 Agrostis sp.
 Agrostis stolonifera
 Austrodanthonia sp.
 i *Anthoxanthum odoratum*
 i *Dactylis glomerata*
 Deyeuxia quadriseta
 i *Holcus lanatus*
 Pentapogon quadrifidus
 Poa tenera
RESTIONACEAE
 Apodasmia brownii
 Baloskion australe
 Baloskion tetraphyllum
 e *Chordifex hookeri*
 Empodisma minus
 Leptocarpus tenax
XYRIDACEAE
 e *Xyris marginata*

PTERIDOPHYTA
BLECHNACEAE
 Blechnum minus
 Blechnum nudum
DENNSTAEDTIACEAE
 Histiopteris incisa
 Pteridium esculentum
DICKSONIACEAE
 Dicksonia antarctica
DRYOPTERERIDACEAE
 Polystichum proliferum
 Rumohra adiantiformis
GLEICHENIACEAE
 Gleichenia dicarpa
 Gleichenia microphylla
 Sticherus tener
LINDSAEACEAE
 Lindsaea linearis
LYCOPODIACEAE
 Lycopodiella serpentinum
 Lycopodium deuterodensum
SCHIZAEACEAE

Schizaea fistulosa
SELAGINELLACEAE
Selaginella uliginosa

APPENDIX 2: Plant community structure

| <i>Eucalyptus nitida</i> dry forest and woodland (TASVEG code DNI, RFA code NI) | | |
|--|----------------|-------------------------------|
| Stratum | Cover % | Species |
| Trees | 20-30% | <i>Eucalyptus nitida</i> |
| Shrubs | 75% | <i>Acacia mucronata</i> |
| | | <i>Bauera rubioides</i> |
| | | <i>Leptospermum scoparium</i> |
| | | <i>Leptospermum nitidum</i> |
| | | <i>Spyridium gunnii</i> |
| | | <i>Hakea epiglottis</i> |
| | | <i>Melaleuca squarrosa</i> |
| | | <i>Banksia marginata</i> |
| Low shrubs | 10% | <i>Sprengelia incarnata</i> |
| | | <i>Epacris impressa</i> |
| Graminoids | 20% | <i>Gahnia grandis</i> |
| | | <i>Baloskion tetraphyllum</i> |
| Ferns | 60% | <i>Gleichenia dicarpa</i> |

| <i>Eucalyptus nitida</i> forest over rainforest (TASVEG code WNR, RFA code NT) | | |
|---|----------------|-----------------------------------|
| Stratum | Cover % | Species |
| Trees | 20-30% | <i>Eucalyptus nitida</i> |
| Shrubs | 75% | <i>Nematolepis squamea</i> |
| | | <i>Banksia marginata</i> |
| | | <i>Acacia mucronata</i> |
| | | <i>Atherosperma moschatum</i> |
| | | <i>Nothofagus cunninghamii</i> |
| | | <i>Monotoca glauca</i> |
| | | <i>Anodopetalum biglandulosum</i> |
| | | <i>Cenarrhenes nitida</i> |
| | | <i>Anopterus glandulosus</i> |
| Ferns | 10% | <i>Dicksonia antarctica</i> |
| | | <i>Histiopteris incisa</i> |

| <i>Leptospermum</i> with rainforest scrub (TASVEG code RLS, RFA code M-) | | |
|---|----------------|------------------------------------|
| Stratum | Cover % | Species |
| Trees | 75% | <i>Leptospermum lanigerum</i> |
| | | <i>Nothofagus cunninghamii</i> |
| | | <i>Eucryphia lucida</i> |
| | | <i>Acacia melanoxylon</i> |
| | | <i>Phyllocladus aspleniifolius</i> |
| Shrubs | 50% | <i>Anodopetalum biglandulosum</i> |
| | | <i>Cenarrhenes nitida</i> |
| | | <i>Anopterus glandulosus</i> |
| Graminoids | 10% | <i>Gahnia grandis</i> |
| Ferns | 25% | <i>Dicksonia antarctica</i> |
| | | <i>Histiopteris incisa</i> |

| <i>Acacia melanoxylon</i> forest on rises (TASVEG code NAR, RFA code BR-) | | |
|--|----------------|------------------------------------|
| Stratum | Cover % | Species |
| Trees | 70% | <i>Acacia melanoxylon</i> |
| | | <i>Nothofagus cunninghamii</i> |
| | | <i>Eucryphia lucida</i> |
| | | <i>Phyllocladus aspleniifolius</i> |
| Shrubs | 25% | <i>Anodopetalum biglandulosum</i> |
| | | <i>Cenarrhenes nitida</i> |
| | | <i>Leptospermum nitida</i> |
| Graminoids | 20% | <i>Gahnia grandis</i> |
| Ferns | 15% | <i>Dicksonia antarctica</i> |
| | | <i>Histiopteris incisa</i> |

| <i>Eucalyptus nitida</i> forest over <i>Leptospermum</i> (TASVEG code WNL, RFA code NT) | | |
|--|----------------|-------------------------------|
| Stratum | Cover % | Species |
| Trees | 20-30% | <i>Eucalyptus nitida</i> |
| Shrubs | 75% | <i>Acacia mucronata</i> |
| | | <i>Leptospermum scoparium</i> |
| | | <i>Leptospermum nitidum</i> |
| | | <i>Bauera rubioides</i> |
| | | <i>Cenarrhenes nitida</i> |
| | | <i>Anopterus glandulosus</i> |
| | | <i>Philotheca virgata</i> |
| Ferns | 20% | <i>Gleichenia microphylla</i> |
| Graminoids | 20% | <i>Gahnia grandis</i> |

| Western wet scrub (TASVEG code SWW, RFA code L) | | |
|--|----------------|---------------------------------|
| Stratum | Cover % | Species |
| Tall shrubs | 10% | <i>Eucalyptus nitida</i> |
| Shrubs | 70% | <i>Bauera rubioides</i> |
| | | <i>Leptospermum scoparium</i> |
| | | <i>Leptospermum nitidum</i> |
| | | <i>Leptospermum glaucescens</i> |
| | | <i>Acacia mucronata</i> |
| | | <i>Banksia marginata</i> |
| Graminoids | 30% | <i>Gahnia grandis</i> |
| | | <i>Empodisma minus</i> |
| Ferns | 40% | <i>Gleichenia dicarpa</i> |

| Buttongrass moorland and sedgeland with emergent shrubs (TASVEG code MBS) | | |
|---|---------|--------------------------------------|
| Stratum | Cover % | Species |
| Shrubs | 35% | <i>Leptospermum scoparium</i> |
| | | <i>Leptospermum nitidum</i> |
| | | <i>Leptospermum glaucescens</i> |
| | | <i>Bauera rubioides</i> |
| | | <i>Sprengelia incarnata</i> |
| Graminoids | 80% | <i>Gymnoschoenus sphaerocephalus</i> |
| | | <i>Xyris marginata</i> |
| | | <i>Leptocarpus tenax</i> |
| | | <i>Acion hookeri</i> |
| | | <i>Patersonia fragilis</i> |

Natural Values Report

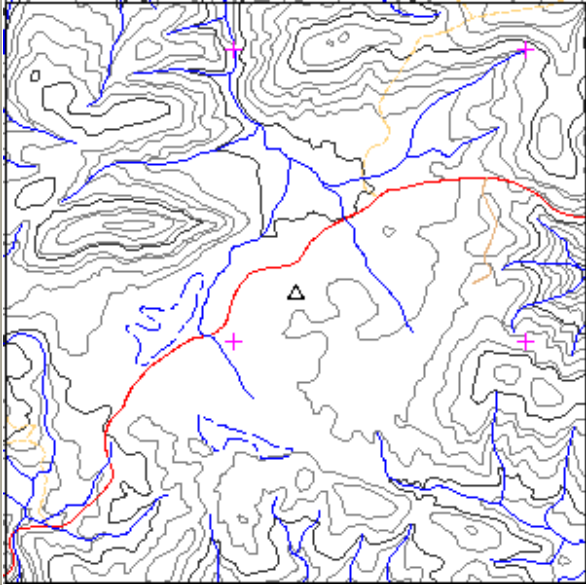
Comstock



Requested by **Brian French**

Phone **0362337870** email bfrench@eci-consulting.com

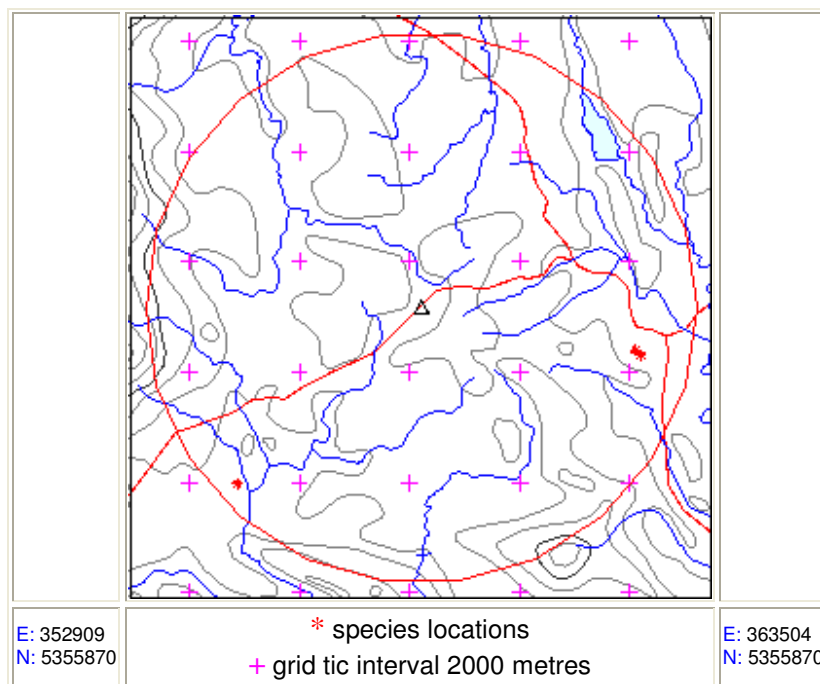
Date **Thu Feb 23 2006, 08:10:20**

| | | |
|-------------------------|--|-------------------------|
| E: 357213 N: 5362167 | Location E: 358214 N: 5361167 | E: 359214 N: 5362167 |
| |  | |
| E: 357213 N: 5360167 | 1:25000 Map: HEEMSKIRK 3436 IBRA5 Bioregion: 4 - West Municipality: West Coast NRM Region: North West | E: 359214 N: 5360167 |

Rare or Threatened Fauna

None found within 500 m.

| | | |
|-------------------------|--|-------------------------|
| E: 352909 N: 5366463 | Rare or Threatened Fauna within 5000 metres | E: 363504 N: 5366463 |
|-------------------------|--|-------------------------|



12 sites found

| NAM E | NEW_NA ME | COMM ON | S S | N S | EAS T | NORT H | AC C | RECORD ER | DAT E1 | TAG |
|------------------------------------|------------------------------------|----------------------------|--------|--------|----------|-----------|---------|--------------|----------------|-------------------------|
| Aquila audax fleayi | Aquila audax fleayi | wedge-tailed eagle | e | EN | 354877 | 5357979 | 18500 | RAOU | 28/02/19 81 | raou:raou:108 488 |
| Aquila audax fleayi | Aquila audax fleayi | wedge-tailed eagle | e | EN | 354877 | 5357979 | 18500 | RAOU | 03/12/19 78 | raou:raou:405 78 |
| Aquila audax fleayi | Aquila audax fleayi | wedge-tailed eagle | e | EN | 354877 | 5357979 | 18500 | RAOU | 25/08/19 79 | raou:raou:607 73 |
| Dasyurus maculatus maculatus | Dasyurus maculatus maculatus | spotted-tailed quoll | r | VU | 362100 | 5360400 | 25 | MJones | 01/01/19 90 | cra-rfa:qs- mj:12682 |
| Dasyurus maculatus maculatus | Dasyurus maculatus maculatus | spotted-tailed quoll | r | VU | 362200 | 5360300 | 100 | MJones | 01/01/19 96 | cra-rfa:qs- mj:12683 |
| Haliaeetus leucogaste r | Haliaeetus leucogaster | white-bellied sea-eagle | v | | 354877 | 5357979 | 18500 | RAOU | 05/12/19 78 | raou:raou:405 74 |
| Haliaeetus leucogaste r | Haliaeetus leucogaster | white-bellied sea-eagle | v | | 354877 | 5357979 | 18500 | RAOU | 07/12/19 78 | raou:raou:405 77 |
| Haliaeetus leucogaste r | Haliaeetus leucogaster | white-bellied sea-eagle | v | | 354877 | 5357979 | 18500 | RAOU | 31/03/19 81 | raou:raou:942 33 |
| Haliaeetus leucogaste r | Haliaeetus leucogaster | white-bellied sea-eagle | v | | 354877 | 5357979 | 18500 | RAOU | 12/03/19 80 | raou:raou:701 43 |
| Haliaeetus leucogaste r | Haliaeetus leucogaster | white-bellied sea-eagle | v | | 354877 | 5357979 | 18500 | RAOU | 25/08/19 79 | raou:raou:607 73 |
| Halobaena caerulea | Halobaena caerulea | blue petrel | v | VU | 354877 | 5357979 | 18500 | RAOU | 03/12/19 78 | raou:raou:405 54 |

| | | | | | | | | | | |
|---------------------------------|---------------------------------|----------------------------------|---|----|--------|---------|-------|------|------------|-----------------|
| Pachyptila turtur subantarctica | Pachyptila turtur subantarctica | fairy prion southern sub-species | e | VU | 354877 | 5357979 | 18500 | RAOU | 13/12/1977 | raou:raou:23286 |
| Pachyptila turtur subantarctica | Pachyptila turtur subantarctica | fairy prion southern sub-species | e | VU | 354877 | 5357979 | 18500 | RAOU | 30/11/1978 | raou:raou:48219 |
| Pachyptila turtur subantarctica | Pachyptila turtur subantarctica | fairy prion southern sub-species | e | VU | 354877 | 5357979 | 18500 | RAOU | 03/12/1978 | raou:raou:40554 |

For more information:

Contact: Threatened Species Unit - Enquiries

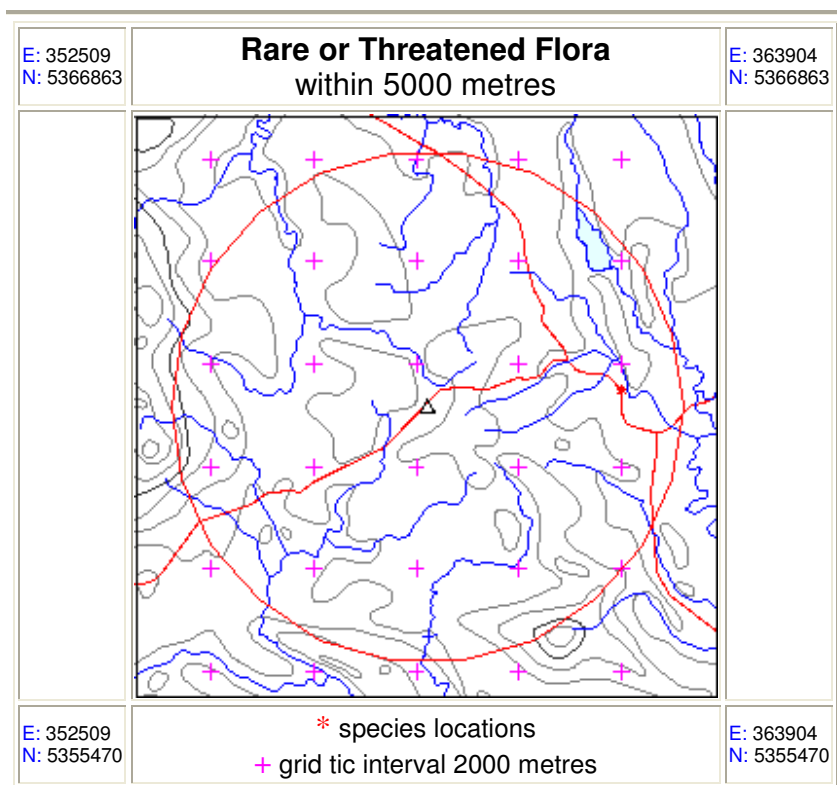
Threatened Species Unit

Phone: 03 6233 3424

Email: Threatened.Species.Unit@dpiwe.tas.gov.au

Rare or Threatened Flora

None found within 500 m



1 sites found

| NAME | NEW_NAME | COMMON | SS | NS | EAST | NORTH | ACC | RECORDER | DATE1 | TAG |
|---------------------|---------------------|---------------|----|----|--------|---------|-------|-----------|------------|----------------------------|
| Orthoceras strictum | Orthoceras strictum | horned orchid | r | | 362000 | 5361500 | 10000 | L. Rodway | 01/01/0001 | Herbarium:herb_checked:223 |

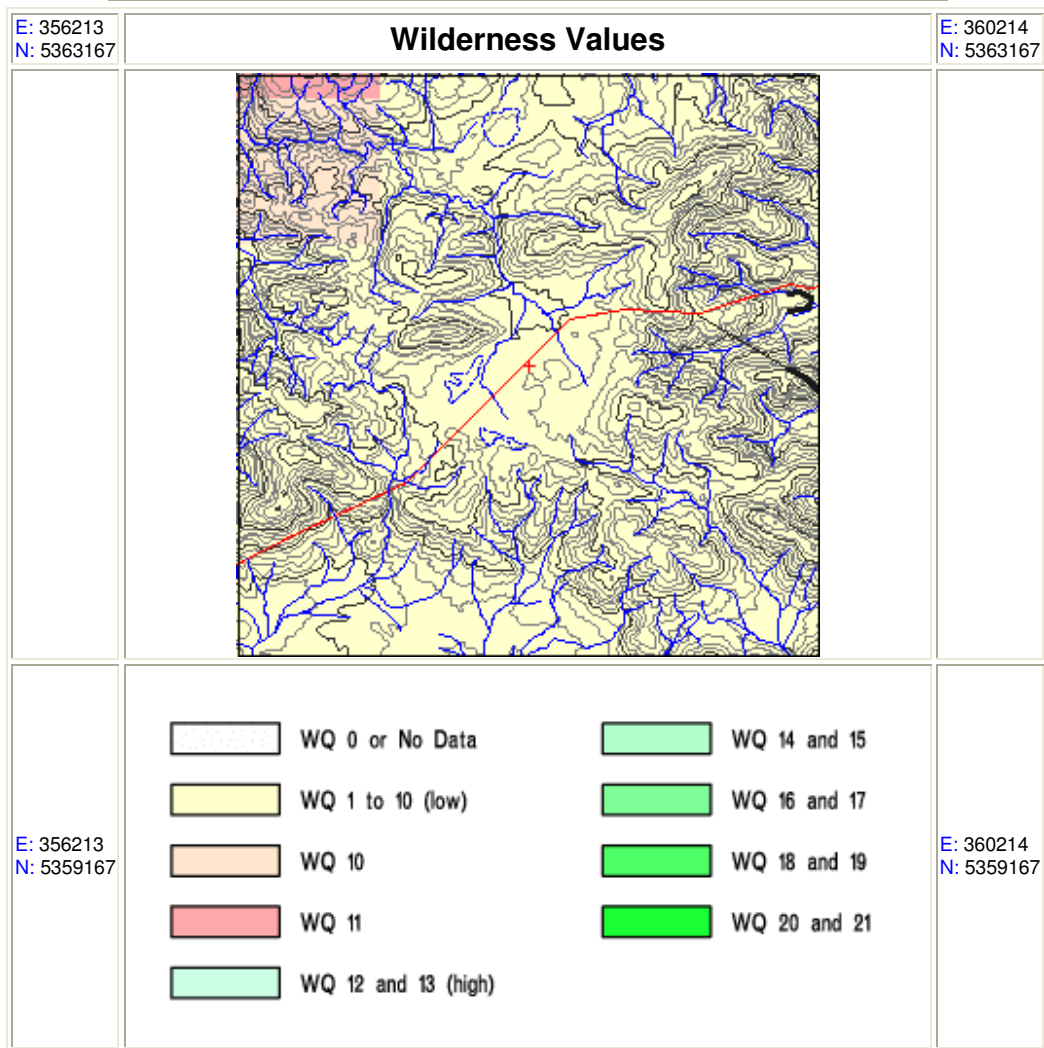
For more information:

Contact: Threatened Species Unit - Enquiries

Threatened Species Unit

Phone: 03 6233 3424

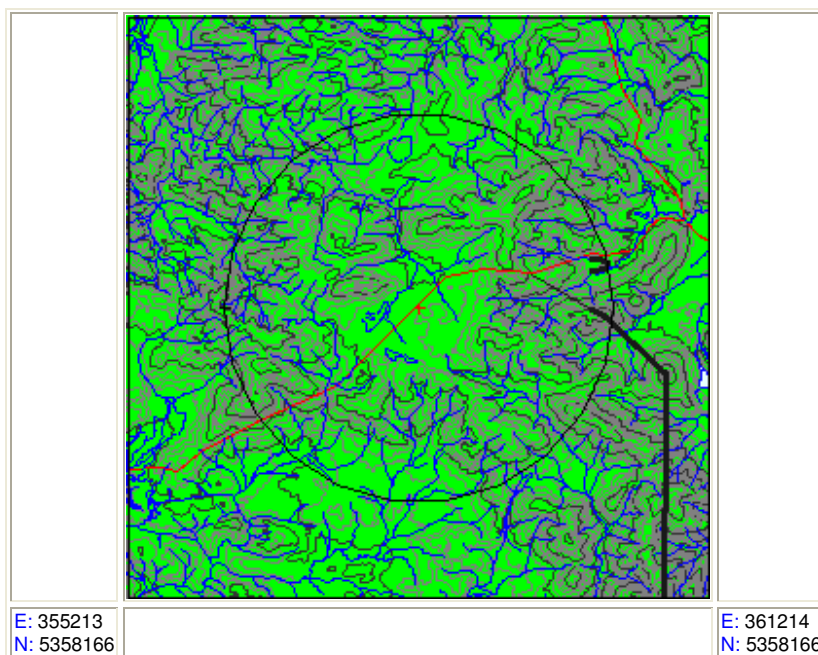
Email: Threatened.Species.Unit@dpiwe.tas.gov.au



Source: [Australian Land Disturbance Database \(1995\)](#)

Value at location is 6 - Low Quality

| | | |
|-------------------------|--|-------------------------|
| E: 355213 N: 5364167 | Geoconservation Areas within 2000 metres | E: 361214 N: 5364167 |
|-------------------------|--|-------------------------|



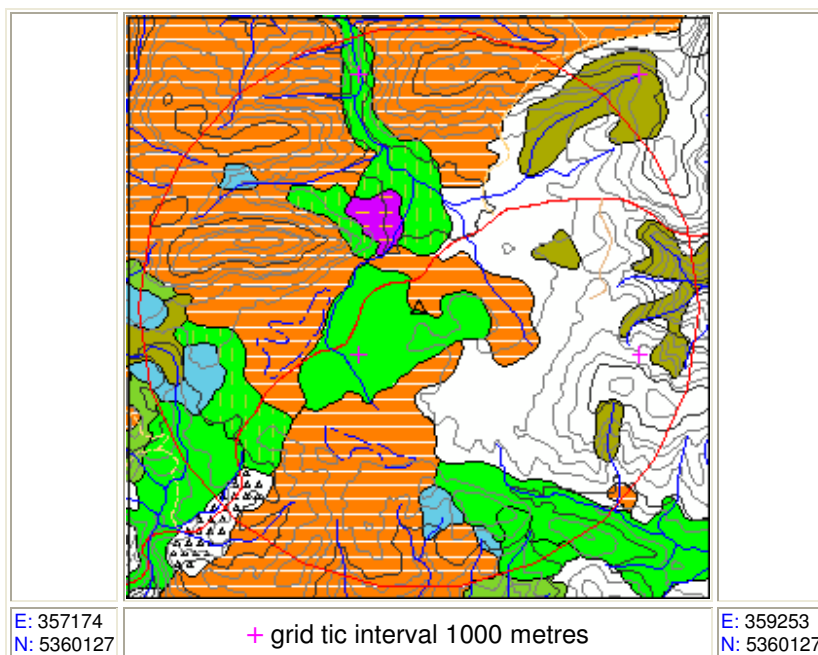
2 areas found.

| GIS_CODE | NAME |
|-----------------------|-------------------------------|
| OLG30 | Western Tasmania Blanket Bogs |

For more information please contact:
Mike Pemberton, Senior Earth Scientist
Mike.Pemberton@dpiwe.tas.gov.au
Phone (03) 6233 6405.

Please note that due to platform incompatibility the TASVEG version used on this server is now out of date. The latest version will be available on the new server which is now under development. In the meantime, the latest version of TASVEG can be accessed via [The LIST website](#) or a CD can be ordered from <http://www.gisparks.tas.gov.au/ValueReports/mailto>

| | | |
|-------------------------|---|-------------------------|
| E: 357174 N: 5362206 | TASVEG Communities within 1000 metres | E: 359253 N: 5362206 |
|-------------------------|---|-------------------------|



TASVEG Communities present within 1000 metres of point:

| | | | | |
|--|-------|--|---|---------|
| | Bb | Butongrass moorland | Bushcare Management Information | 3413 ha |
| | LA | L. scoparium/ A. mucronata short forest | | 260 ha |
| | M- | short rainforest | Bushcare Management Information | 2 ha |
| | NT | E. nitida wet forest | Bushcare Management Information | 11 ha |
| | Sn | western wet scrub | Bushcare Management Information | 13 ha |
| | Sr | rainforest scrub | Bushcare Management Information | 30 ha |
| | St | Leptospermum lanigerum scrub | | 61 ha |
| | StEn- | Leptospermum lanigerum scrub sparse E. nitida | | 25 ha |
| | Uc | rural misc. | | 6 ha |

Private Forest Reserves Program Candidate Areas

None found within 1000 m.